Remarks

Claims 1, 3, 5 and 6 have been amended. Claims 2, 11-13, 18 and 19 have been cancelled. New claims 20 and 21 have been added. No new matter has been introduced by these amendments.

At pages 2-3 of the Office Action, claims 1-3 and 11 were objected to because they contained the abbreviation "PNPase." The Examiner suggested that this abbreviation be replaced with "polynucleotide phosphorylase (PNPase)." The Examiner's suggestion has been followed and claims 1 and 3 have been amended. Claims 2 and 11 have been cancelled. Accordingly, this objection is deemed moot.

At page 3 of the Office Action, claim 1 was rejected under 35 U.S.C. § 112, second paragraph, because the term "procaryote-derived" is unclear. The Examiner also noted that the term "derived" could be replaced with the term "isolated."

Claim 1 has been amended to replace the term "procaryote-derived" with the phrase "polynucleotide phosphorylase (PNPase) gene, which gene is isolated from a prokaryote selected from the group consisting of *Escherichia coli* and its analogous bacteria and is...". Accordingly, this rejection is deemed overcome.

Starting at page 3 of the Office Action, the Examiner has rejected claims 1-7 and 11-19 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The crux of this rejection is the Examiner's belief that the specification does not disclose enough representative species to support the genus claims.

Claims 2, 11-13, 18 and 19 have been cancelled. Thus, as to those claims the rejection is deemed moot.

Claim 1 has been amended to recite that the expression vector comprises "a polynucleotide phosphorylase (PNPase) gene, which gene is isolated from a prokaryote selected from the group consisting of *Escherichia coli* and its analogous bacteria." Applicants believe this amendment is sufficient to overcome the written description rejection.

The PNPases encoded by the PNPase genes isolated from *E. coli* and analogous bacteria such as *Salmonella tryphimurium* are highly homologous to one another, probably more than 90% homologous. Therefore, one skilled in the art would reasonably conclude that the PNPases included within the scope of the presently claimed invention will behave, on the whole, in the same way as the PNPase, which is encoded by the PNPase gene isolated from the *E. coli* C 600 K disclosed in the specification. Thus, applicants submit that the example in the specification is sufficient to provide a written description of the invention as presently claimed. Accordingly, reconsideration of this rejection and allowance of all claims is respectfully requested.

Starting at page 6 of the Office Action, the Examiner has rejected the claims 1-7 and 11-19 as failing to comply with the enablement requirement of 35 U.S.C. § 112, first paragraph. The Examiner stated that the specification does not support the broad scope of the claims because the specification does not establish: (A) regions of the protein structure which may be modified without effecting PNPase activity; (B) the general tolerance of PNPase to modification and extent of such tolerance; (C) a rational and predictable scheme for modifying any PNPase residues with an expectation of obtaining the desired biological function; and (D) the specification provides insufficient guidance as to which of the essentially infinite possible choices is likely to be successful. Office Action at pp. 9-10.

This rejection is respectfully traversed. It is general common knowledge for a person of ordinary skill in the relevant art that the conserved regions in the PNPase are important to retain the catalytic activity.

The Examiner's attention is respectfully directed to "Journal of Molecular Biology", vol. 321 (2002) pp. 397-409 (copy included). This reference shows the effect of various mutations inserted in the amino acids of *E. coli* PNPase. According to the reference, almost all the mutations inserted to the phylogenetically conserved amino acids reduce the catalytic activity of PNPase (the column of "Pol." in the center of the column of "Catalysis", Table 1) . From the result, one skilled in the art can estimate that the mutations in the amino acids which are little conserved do not affect the catalytic activity of PNPase. Therefore, such mutations are allowable. In addition, it is natural that the amino acids in the transition regions between domains (e.g. first core domain, all--helical domain, second core domain, KH domain and S1 domain) are little conserved and can be also replaced or modified.

For the above reasons, reconsideration of the enablement rejection and allowance of all claims are respectfully requested.

Finally, claims 1-4, 7 and 11-19 have been rejected under 35 U.S.C. § 102 as anticipated by Clements et al. Claim 1 has been amended to incorporate the elements of claim 2 and claim 2 (along with claims 11-13, 18 and 19) has been cancelled. As amended, claim 1 now requires that expression continues until the bacteria is disrupted and the PNPase is recovered and purified from the supernatant. These limitations are not taught by Clements et al. Thus, reconsideration of this rejection and allowance of claim 1 is respectfully requested. Also, since all of the

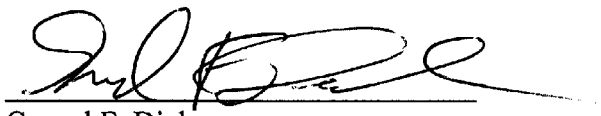
remaining claims are dependent, directly or individually, from claim 1, these claims are also patentable over Clements et al.

If the Examiner believes that issues may be resolved by telephone interview, the Examiner is respectfully urged to telephone the undersigned at (212) 801-2134. The undersigned may also be contacted by e-mail at diebnerg@gtlaw.com.

A one month Extension of Time fee of $120.00 is believed to be necessary. The Commissioner is hereby authorized to charge this fee, and any additional fees, which may be required for this amendment or credit any overpayment to Deposit Account No. 50-1561.

Dated: May 24, 2007

By: Respectfully submitted,



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